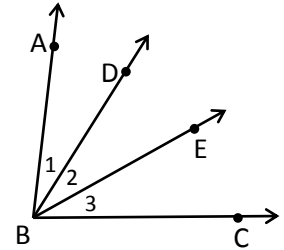


**Problem Set 2-4 LAB**

Complete the following 2-column proofs.

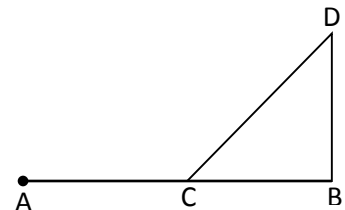
- Given:**  $\angle 1 \cong \angle 2$ ,  $\overrightarrow{BE}$  bisects  $\angle DBC$   
**Prove:**  $m\angle 1 = m\angle 3$



Statements	Reasons
1. $\angle 1 \cong \angle 2$	1.
2. $\overrightarrow{BE}$ bisects $\angle DBC$	2.
3. $\angle 2 \cong \angle 3$	3.
4. $\angle 1 \cong \angle 3$	4.
5. $m\angle 1 = m\angle 3$	5.

- Given:** C is the midpoint of  $\overline{AB}$ ,  $\overline{CB} \cong \overline{DB}$

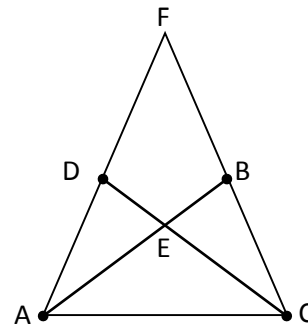
**Prove:**  $\overline{AC} \cong \overline{DB}$



Statements	Reasons
1. C is the midpoint of $\overline{AB}$	1. Given
2.	2.
3. $\overline{CB} \cong \overline{DB}$	3. Given
4. $\overline{AC} \cong \overline{DB}$	4.

3. **Given:**  $D$  bisects  $\overline{AF}$ ;  $B$  is the midpoint of  $\overline{CF}$ ;  $\overline{ADF}$ ;  $\overline{CBF}$ ;  
 $\overline{AF} \cong \overline{CF}$

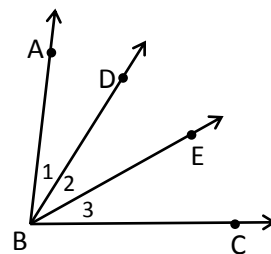
**Prove:**  $\overline{AD} \cong \overline{CB}$



Statements	Reasons
1. $D$ bisects $\overline{AF}$ ; $\overline{ADF}$	1. Given
2.	2.
3. $B$ is the midpoint of $\overline{CF}$ ; $\overline{CBF}$	3. Given
4.	4. Definition of a Midpoint
5.	5. Given
6. $\overline{AD} \cong \overline{CB}$	6.

4. **Given:**  $\angle 2 \cong \angle 1$ ,  $\angle 1 \cong \angle 3$

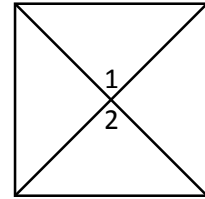
**Prove:**  $\overline{BE}$  bisects  $\angle DBC$



Statements	Reasons
1. $\angle 2 \cong \angle 1$ , $\angle 1 \cong \angle 3$	1. Given
2.	2. Transitive Property of Congruence (Step 1 $\rightarrow$ 1)
3. $\overline{BE}$ bisects $\angle DBC$	3.

**Problem Set 2-5 LAB**

Determine the main theorem that you will need to apply in each proof. Then complete the proofs.



1. **Given:**  $m\angle 1 = 90^\circ$ ;  $\angle 2$  is a right angle

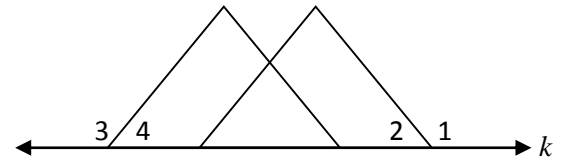
**Prove:**  $\angle 1 \cong \angle 2$

Plan (Theorem): \_\_\_\_\_

Statements	Reasons
1. $m\angle 1 = 90^\circ$	1.
2. $\angle 1$ is a right angle	2.
3. $\angle 2$ is a right angle	3.
4. $\angle 1 \cong \angle 2$	4.

2. **Given:**  $\angle 1 \cong \angle 3$ , line  $k$

**Prove:**  $\angle 2 \cong \angle 4$



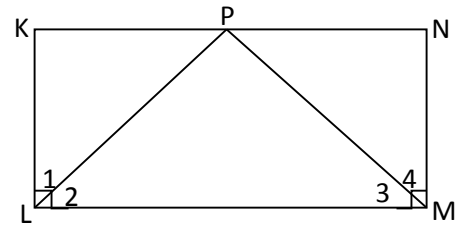
Plan (Theorem): \_\_\_\_\_

Statements	Reasons
1. line $k$	1.
2. $\angle 1$ & $\angle 2$ form a linear pair AND _____	2. Linear Pair $\rightarrow$ Supplementary Angles
3. $\angle 1$ supplementary to $\angle 2$ AND _____	3.
4.	4. Given
5. $\angle 2 \cong \angle 4$	5.

3. **Given:**  $\angle KLM$  and  $\angle NML$  are right angles.

$$\angle 2 \cong \angle 3$$

**Prove:**  $\angle 1 \cong \angle 4$

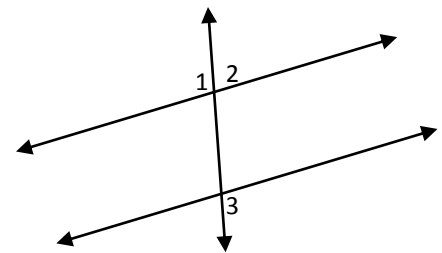


Plan (Theorem): \_\_\_\_\_  
 (hint: angle addition postulate & complementary angles)

Statements	Reasons
1. $m\angle 1 + m\angle 2 = m\angle KLM$ $m\angle 4 + m\angle 3 = m\angle NML$	1.
2. $\angle KLM$ and $\angle NML$ are right angles.	2. Given
3.	3. Definition of a right angle
4. $m\angle 1 + m\angle 2 = 90^\circ$ ; $m\angle 4 + m\angle 3 = 90^\circ$	4.
5.	5. Definition of Complementary Angles
6. $\angle 2 \cong \angle 3$	6. Given
7. $\angle 1 \cong \angle 4$	7.

4. **Given:**  $\angle 2$  and  $\angle 3$  are supplementary

**Prove:**  $\angle 1 \cong \angle 3$



Plan (Theorem): \_\_\_\_\_

Statements	Reasons
1.	1.
2. $\angle 2$ and $\angle 1$ are supplementary	2.
3. $\angle 2$ and $\angle 3$ are supplementary	3. Given
4. $\angle 1 \cong \angle 3$	4.

What are angles 1 & 3 called if the lines are parallel? \_\_\_\_\_

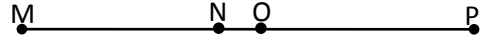
## Problem Set 2-6 LAB

Do each proof with the indicated method.

### Proof #1: Flowchart Using Common/Overlapping Segment Theorem

**Given:**  $\overline{MNOP}$ ,  $\overline{MN} \cong \overline{PO}$

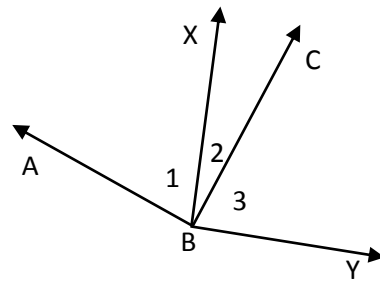
**Prove:**  $\overline{MO} \cong \overline{PN}$



### Proof #2: 2-Column Using Common/Overlapping Angle Theorem

**Given:**  $\angle ABC$  and  $\angle XBY$  are right angles

**Prove:**  $\angle 1 \cong \angle 3$

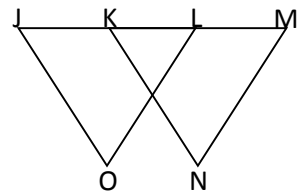


Statements	Reasons
1.	1. Given
2. $\angle ABC \cong \angle XBY$	2.
3. $\angle 2 \cong \angle 2$	3.
4.	4.

### Proof #3: Paragraph Using Common/Overlapping Segment Theorem

**Given:**  $\overline{JL} \cong \overline{KM}$

**Prove:**  $\overline{JK} \cong \overline{LM}$



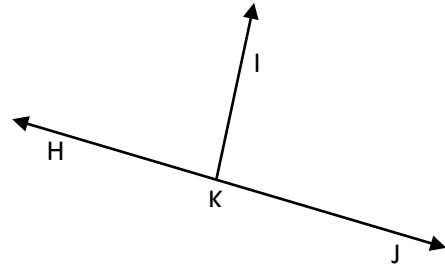
## Problem Set 2-7 LAB

Copy all of the proofs onto notebook paper, including the given/prove and drawing. Then do the proof with the indicated method.

### Proof #1: Flowchart (new theorem)

**Given:**  $\angle HKJ$  is a straight angle.  
 $\overline{KI}$  bisects  $\angle HKJ$

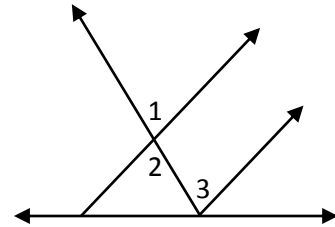
**Prove:**  $\angle IKJ$  is a right angle



### Proof #2: Paragraph (new theorem)

**Given:**  $\angle 1 \cong \angle 3$

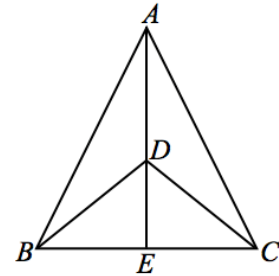
**Prove:**  $\angle 2 \cong \angle 3$



### Proof #3: 2-Column (review)

**Given:**  $\angle BDE \cong \angle CDE$

**Prove:**  $\angle BDA \cong \angle CDA$



### Proof #4: Your Choice (review)

**Given:**  $m\angle 1 = m\angle 3$ ,  $\angle WXY$  is a right angle

**Prove:**  $\angle 1$  complementary to  $\angle 2$

